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Johnson, Sandra A, Simms, Ian, Sheringham, Jessica, Bickler, Graham, Bennett, Catherine M, Hall, Ruth and Cassell, Jackie A (2010) The implementation of chlamydia screening: a cross-sectional study in the south east of England. Sexually Transmitted Infections, 86 (3). pp. 217-221. ISSN 1368-4973

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The implementation of chlamydia screening: a cross-sectional study in the South East of England

Sandra A Johnson,[1,2] Ian Simms,[3] Jessica Sheringham,[4] Graham Bickler,[1] Catherine M Bennett,[2] Ruth Hall,[1] Jackie A Cassell[1,5]

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[1]South East Region, Health Protection Agency, London, UK
[2]Melbourne School of Population Health, The University of Melbourne, Melbourne, Australia
[3]National Chlamydia Screening Programme, Health Protection Agency, London, UK
[4]Health Care Evaluation Group, Department of Epidemiology and Public Health, London, UK
[5]Brighton and Sussex Medical School, Brighton, UK

Correspondence to
Ms Sandra A Johnson, Health Protection Agency—South East Region, 7th Floor, Holborn Gate, 330 High Holborn, London WC1V 7PP, UK;
sandra.johnson@hpa.org.uk

Accepted 24 November 2009
Published Online First
10 May 2010

ABSTRACT

Background England's National Chlamydia Screening Programme (NCSP) provides opportunistic testing for under 25 year-olds in healthcare and non-healthcare settings. The authors aimed to explore relationships between coverage and positivity in relation to demographic characteristics or setting, in order to inform efficient and sustainable implementation of the NCSP.

Methods The authors analysed mapped NCSP testing data from the South East region of England between April 2006 and March 2007 inclusive to population characteristics. Coverage was estimated by sex, demographic characteristics and service characteristics, and variation in positivity by setting and population group.

Results Coverage in females was lower in the least deprived areas compared with the most deprived areas (OR 0.48; 95% CI 0.45 to 0.50). Testing rates were lower in 20—24-year-olds compared with 15—19-year-olds (OR 0.69; 95% CI 0.67 to 0.72 for females and OR 0.67; 95% CI 0.64 to 0.71 for males), but positivity was higher in older males.

Females were tested most often in healthcare services, which also identified the most positives. The greatest proportions of male tests were in university (27%) and military (19%) settings which only identified a total of 11% and 13% of total male positives respectively. More chlamydia-positive males were identified through healthcare services despite fewer numbers of tests.

Conclusions Testing of males focused on institutional settings where there is a low yield of positives, and limited capacity for expansion. By contrast, the testing of females, especially in urban environments, was mainly through established healthcare services. Future strategies should prioritise increasing male testing in healthcare settings.

INTRODUCTION

Genital chlamydial infection (chlamydia) is the commonest sexually transmitted infection diagnosed in England. The prevalence among those accepting screening in England in 2006/2007 was over 10% in males and females aged 16—24.[1] Complications associated with chlamydia include pelvic inflammatory disease, which can lead to infertility and ectopic pregnancy.[2]

England began to roll out its National Chlamydia Screening Programme (NCSP) in 2003, with testing occurring throughout the country by 2007. The NCSP targets sexually active males and females aged under 25 years through opportunistic screening within both healthcare settings (excluding GUM) and non-healthcare settings.[3] It differs from a national pilot programme[4] and from the chlamydia screening studies (ClaSS)[5] in having less reliance on primary care, and to date coverage rates regionally and nationally have not been comparable with the pilot which achieved testing of 50% of the target female population in Portsmouth and 39% in Wirral in a 1-year period.[4] Modelling studies on chlamydia screening in England also demonstrated that not only does coverage have to be high but also it is important that populations known to have higher positivity are effectively targeted.[6]

The data from the first year of the NCSP (April 2003—March 2004) have been reported, including positivity by both behavioural and demographic variables.[7] While females 16—19 had comparable positivity to 20—24-year-olds, among males aged 16—19, positivity was lower than in those aged 20—24.[7] Individuals of black ethnicities showed a higher positivity than white ethnicities. Testing volumes were highest in contraceptive clinics, youth services and general practice where positivity was at least 8.3% in females and 7.6% in males. Universities contributed 3% of female tests and 25% of male tests with a positivity of 5.0% and 4.7% respectively.

Prior to the NCSP, chlamydia diagnoses were shown to be higher in more deprived areas, and this was not explained by differential testing rates.[8] Modelling studies estimate that the NCSP needs to screen at least 36% of sexually active individuals under 25 years annually to deliver its anticipated health benefits.[6] Including males in the model results in a greater and faster reduction in prevalence but requires considerably more testing. Inequalities in coverage, if the most at risk were less likely to be tested, may result in a less efficient and equitable outcome of the screening programme.[8]

In this study we explored coverage and positivity of tests within the NCSP within the South East region of England, in relation to demographic characteristics and settings, in order to inform equitable implementation of the programme.

METHODS

Over 8.3 million individuals are resident in the South East region of England, whom 11% belong to the 16—24-year-old age group eligible for chlamydia screening. South East England surrounds London to the South and West, and contains both rural and urban districts.[9] We analysed NCSP anonymised testing data over a 1-year period (April 2006—March 2007), including all individuals under 25 years old tested through the programme within the South East region of England.

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The anonymised data available to us included test result, sex, postcode of residence, ethnicity, result, age in years and clinic type. We used the 2006 National Administrative Codes Service Postcode Directory[10] to map postcodes to administrative geographies based on population size, called Lower Super Output Areas (LSOA), of which populations estimates are also available, in order to estimate coverage. Not all tests mapped to the South East, and these were categorised into three groups: postcodes within the South East; postcode outside the South East; and postcode not able to be mapped (including those where the postcode was blank or incorrect).

South East postcodes were then subcategorised into screens with postcodes identical to the clinic where they were tested and others.

Mappable South East postcodes were assigned to urban/rural areas category using the Postcode Directory. Areas were classed as urban if they were within a settlement with at least 10 000 people, and rural if under 10 000.

The 2007 English Indices of Multiple Deprivation (IMD) is derived from 37 different indicators which cover: Income, Employment, Health and Disability, Education, Skills and Training, Barriers to Housing and Services, Living Environment and Crime. These are weighted and combined to create the overall IMD 2007 rank for all LSOAs throughout the country.[11] LSOAs within the South East region were split into quintiles according to their national rank for both the coverage and positivity analyses. For the coverage analyses, the urban/rural variable was assigned at LSOA level; where both urban and rural postcodes were represented, the mode was taken, and if equal, urban was assigned.

The setting of each test was assigned to healthcare or non-healthcare settings according to NCSP guidance at that time.[3] Healthcare includes accident and emergency (which also includes minor injuries and walk-in centres), community contraceptive services, general practice, gynaecology and obstetrics, pharmacy, prison, sexual health services and termination of pregnancy. Non-healthcare settings include chlamydia screening offices, military, outreach, postal kits, universities (including colleges and schools) and youth services.

Ethics review and data protection

The analysis was undertaken as a service evaluation by the Health Protection Agency which manages the NCSP and holds its dataset. As such, no separate ethical review was required. The project was approved by appropriate senior managers, and standard procedures for secure handling of data on internal secure servers within the HPA were followed, with no identifiable, pseudo-anonymised data of postcode data being transferred outside the HPA.

Testing coverage analyses within the NCSP

The Office of National Statistics provided mid-2005 population estimates for LSOAs by sex and for the age groups 15–19 and 20–24.[12] Counts of tests within each LSOA, by age group and sex, were generated. Poisson regression was then used to estimate incident rate ratios for testing coverage by age group, urban/rural location and deprivation stratified by sex. This assumes that a Poisson distribution, that is all events, in this case tests, are independent. The individuals tested who had a postcode that could not be mapped or who were resident outside the South East were excluded.

Where a postcode of residence is identical to the clinic in which the test was taken, it may not be a true residential postcode (eg, university testing events). This could result in an over-representation of individuals living in or attending establishments (eg, university residence, military bases) on a non-permanent basis, since these individuals would not be counted within population estimates. We therefore examined coverage at LSOA level excluding tests with a postcode of residence identical to the clinic postcode, in order to determine whether these tests skewed the distribution and should therefore be removed from coverage analyses.

Positivity analyses

Positivity was defined as the proportion of tests with a positive result recorded. Logistic regression was used to identify possible explanatory variables for positivity within this dataset. Multivariate analyses for separate male and female analyses included all variables that were shown to have an association with positivity with a p value of less than 0.15 in univariate analyses for either sex. Setting was derived from clinic types and so was not included in multivariate analyses.

The multivariate models in this study were used to describe testing and positivity with respect to a number of variables, not to inform a predictive model, and investigating possible interactions or effect modification between variables was not within the scope of this study.

RESULTS

Data on 26 146 tests were available. The demographic and geographic distribution of those tested is shown in table 1. Twenty-five per cent of all tests were in males and 75% in females. The majority of all tests were in the 16–19-year age group (58% of male tests, 53% of female tests), followed by the 20–24-year age group (37% male, 38% female) and then the under-16-year-olds (5% male, 10% female). In both sexes, 12% of tests could not be mapped to the postcode directory.

The most common clinic types for testing of females were community contraception services (35%), youth services (22%) and general practice (17%). For males, the most common clinic types were universities (27%), military (19%) and youth services (16%). More tests were done in healthcare than in non-healthcare settings for females (59%), but the reverse was true for males (28%).

Coverage of testing within the South East NCSP

As shown in table 2 1.0% of males and 3.3% of females aged 15–24 were tested. Compared with 15–19-year-olds, both males and females aged 20–24 were less likely to be tested (IRR 0.67, 95% CI 0.64 to 0.71 for males; IRR 0.69, 95% CI 0.67 to 0.72 for females).

As shown in table 1, 28.1% of tests in males had a postcode that was identical to the postcode of the clinic where the sample was taken, whereas for females this accounted for only 3.8% of tests. In some LSOAs, coverage was almost 200% and was clearly inaccurate at this low level of geography. Of these tests in males, the clinic types reporting the highest numbers were military (1045; 57.5%), universities (326; 18.0%), general practice (295; 16.2%) and prison (76; 4.2%). These poorly documented tests therefore are most likely to bias estimates where military and universities are located and were removed for the analyses of coverage by urban/rural status and IMD (both of which are also assigned by postcode) for both males and females.

Testing coverage was lower in rural areas than urban centres for males and females, with IRRs 0.77 (95% CI 0.70/0.84) and 0.60 (95% CI 0.57 to 0.63) respectively. For females, testing coverage shows an increase in a linear relationship with IMD

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Table 1 Tests from individuals under 25 screened in the South East between March 2006 to April 2007 by demographic and geographic variables and sex

Characteristics	Males No of tests (percentage of total)	Females No of tests (percentage of total)
Total		
	6467	19675
Age group		
<16	323 (5.0)	1951 (9.9)
16–19	3747 (57.9)	10320 (52.5)
20–24	2397 (37.1)	7404 (37.6)
Ethnicity		
White	5169 (79.9)	16558 (84.2)
Black	248 (3.8)	418 (2.1)
Asian	50 (0.8)	147 (0.7)
Chinese	58 (0.9)	109 (0.6)
Other ethnic group	62 (1.0)	96 (0.5)
Mixed	145 (2.2)	395 (2.0)
Unknown	735 (11.4)	1952 (9.9)
Result		
Positive	480 (7.4)	1727 (8.8)
Negative	5829 (90.1)	17376 (88.3)
Insufficient specimen	122 (1.9)	239 (1.2)
Other	36 (0.6)	333 (1.7)
Postcode		
South East non-clinic postcode	3720 (57.5%)	16246 (82.6%)
Screen with clinic postcode	1816 (28.1%)	756 (3.8%)
Non-South East postcode	184 (2.8%)	255 (1.3%)
Unmappable postcodes	747 (11.6%)	2418 (12.3%)
Clinic type		
Accident and emergency	10 (0.2)	19 (0.1)
Chlamydia screening office	267 (4.1)	260 (1.3)
Community contraception services	703 (10.9)	6871 (34.9)
General practice	875 (13.5)	3423 (17.4)
Gynaecology and obstetrics	4 (0.1)	540 (2.7)
Military	1200 (18.6)	257 (1.3)
Outreach	162 (2.5)	342 (1.7)
Pharmacy	39 (0.6)	139 (0.7)
Postal kit	214 (3.3)	695 (3.5)
Prison	165 (2.6)	24 (0.1)
Sexual-health services	35 (0.5)	67 (0.3)
Termination of pregnancy	2 (0.0)	584 (3.0)
University	1752 (27.1)	2136 (10.9)
Youth services	1039 (16.1)	4318 (21.9)
Setting		
Healthcare	1833 (28.3)	11667 (59.3)
Non-healthcare	4634 (71.7)	8008 (40.7)
Urban/rural*		
Urban	4513 (81.5)	15016 (88.3)
Rural	1023 (18.5)	1986 (11.7)
South East Indices of Multiple Deprivation categories*		
1 (most deprived)	1242 (22.4)	6148 (36.2)
2	960 (17.3)	3812 (22.4)
3	912 (16.5)	2688 (15.8)
4	1200 (21.7)	2244 (13.2)
5	1222 (22.1)	2110 (12.4)

Four tests were removed because sex was either blank or incorrectly coded.
*Require mappable postcode, South East screens only.

and the incident rate ratio of being tested in the least deprived compared with the most deprived category was 0.48 (95% CI 0.45 to 0.50). For males, the association between testing coverage and deprivation (IMD) is not linear but rather is U-shaped, with the middle categories of deprivation having the lowest coverage.

Positivity of tests by population subgroup

Overall positivity was 7.4% in males and 8.8% in females (table 3). Univariate analyses showed evidence of associations between positivity and all variables of interest, except for urban/rural location in males. All variables were therefore included in the models of testing positivity.

For males, positivity was highest in 20–24-year-olds (8.6%), while both 16–19 and <16 age groups showed a lower positivity with an adjusted OR (AOR) of 0.62 (95% CI 0.49 to 0.79) and 0.21 (95% CI 0.10 to 0.45) respectively after accounting for other variables. Positivity in 20–24-year-old females was 7.6% and, in contrast to males, was similar to 16–19-year-olds (AOR 1.04, 95% CI 0.92 to 1.17) and similarly to males was lower in <16-year-olds (AOR 0.46, 95% CI 0.36 to 0.60).

Positivity was higher in black males compared with positivity in white ethnicities (AOR 2.15, 95% CI 1.40 to 3.29) but lower in females of Asian ethnicities (AOR 0.26, 95% 0.08 to 0.82).

Males living in less deprived areas were less likely to test positive than males in more deprived areas (AOR 0.63 95% CI 0.43 to 0.92). Crude ORs for testing positivity in males showed greater differences between IMD categories than those observed in the adjusted analyses suggesting that the association observed is confounded by other variable/s within the model. Positivity in females varied by deprivation in a non-linear fashion.

In males, tests with a postcode identical to the clinic had a lower positivity than those with a different postcode (AOR 0.60, 95% CI 0.40 to 0.88, data available in web table). For females, differences observed in the crude analyses were no longer significant in the multivariate model, which suggests that this association is confounded by other variable/s within the model.

The distribution of positive tests was analysed by clinic type. Positivity in general practice was 9.4% for males and 8.2% for females. Community contraception services and youth services had comparable or higher positivity, universities showed lower positivity than general practice for both sexes, and military showed lower positivity in males. Community contraception services, youth services and general practice identified the majority of positives for both males and female. In total, 44.0% of positive males were identified through healthcare settings compared with 60.8% for females.

DISCUSSION

In the fourth year of the NCSP, in the South East 1.0% of males and 3.3% of females aged 15–24 were tested. Both testing coverage and positivity varied with demographic factors, and higher coverage therefore did not necessarily correspond with a higher yield of positives. Low positivity was observed in universities and in males aged 15–19 and males tested through military settings. Although some non-healthcare settings such as outreach and chlamydia screening offices (data available in web tables) showed positivity comparable with general practice, it may be difficult to maintain regular screening in these settings, and regular screening is essential for sustained reductions in transmission.

This is the first study describing the associations of coverage and positivity in relation to deprivation and residential status at a subnational level, and informs the planning of NCSP rollout in contrasting demographic settings. By focusing on the contribution of various clinic types and their identification of positives, it adds to our understanding of the programme by clinic type and setting overall.

The limitations of this study point to improvements that need to be made in the collection of data, in order to assess the

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Table 2 Number and percentage of total population screened and crude and adjusted incident rate ratios for testing

Characteristic	Males			Females		
	Total population	N (%) total	Unadjusted incident rate ratio (95% CI)	Total population	N (%) total	Unadjusted incident rate ratio (95% CI)
Total*						
	523093	5451 (1.0)		496061	16510 (3.3)	
Age group						
15–19	271222	3356 (1.2)	1	255996	9995 (3.9)	1
20–24	251871	2095 (0.8)	0.67 (0.64 to 0.71)	240065	6515 (2.7)	0.69 (0.67 to 0.72)
Urban versus rural†						
Urban	424343	3101 (0.7)	1	408294	13972 (3.4)	1
Rural	98750	556 (0.6)	0.77 (0.70 to 0.84)	87767	1804 (2.1)	0.60 (0.57 to 0.63)
Indices of Multiple Deprivation category†						
1 (most deprived)	119094	1098 (0.9)	1	121592	5671 (4.7)	1
2	113482	756 (0.7)	0.72 (0.66 to 0.79)	110768	3637 (3.3)	0.70 (0.68 to 0.73)
3	97225	555 (0.6)	0.62 (0.56 to 0.69)	89894	2496 (2.8)	0.60 (0.57 to 0.62)
4	99371	551 (0.6)	0.60 (0.54 to 0.67)	87898	2068 (2.4)	0.50 (0.48 to 0.53)
5	93921	697 (0.7)	0.80 (0.73 to 0.89)	85909	1904 (2.2)	0.48 (0.45 to 0.50)

*Only tests done in individuals aged 15–24 are included in the coverage analyses.
†Only tests with South East non-clinic postcodes were included in the urban/rural and Indices of Multiple Deprivation univariate analyses (total number is 3657 for males and 15776 for females).

NCSP in future. We assumed that the postcode of residence should not generally be identical to the clinic where the test was done. In some areas, such tests appear to be over-represented, especially for males and within military and university settings. Further work is required to ascertain the true proportion of tests where patient postcode should correctly be identical to clinic postcode, since they render coverage analyses and thus programme evaluation inaccurate. Where postcode of residence

Table 3 Testing and positivity by demographic characteristics

Characteristic	Males				Females			
	Tests	N (% positive)	Crude OR (95% CI)	Adjusted ORs (95% CI)	Tests	N (% positive)	Crude OR (95% CI)	Adjusted ORs (95% CI)
Total								
	6465	480 (7.4)			19670	1727 (8.8)		
Age group								
<16	323	2 (0.6)	0.33 (0.18 to 0.59)	0.21 (0.10 to 0.44)	1951	21 (1.1)	0.56 (0.45 to 0.69)	0.46 (0.36 to 0.60)
16–19	3746	186 (5.0)	0.53 (0.45 to 0.64)	0.62 (0.49 to 0.79)	10317	854 (8.3)	1.05 (0.95 to 1.17)	1.04 (0.92 to 1.17)
20–24	2396	205 (8.6)	1	1	7402	563 (7.6)	1	1
Ethnicity								
White	5167	379 (7.3)	1	1	16554	1530 (9.2)	1	1
Black	248	35 (14.1)	2.08 (1.43 to 3.01)	2.15 (1.40 to 3.29)	418	40 (9.6)	1.04 (0.75 to 1.45)	1.01 (0.69 to 1.50)
Asian	50	3 (6.0)	0.81 (0.25 to 2.60)	0.63 (0.19 to 2.09)	147	6 (4.1)	0.42 (0.18 to 0.95)	0.26 (0.08 to 0.82)
All other	207	16 (7.7)	1.06 (0.63 to 1.78)	0.67 (0.34 to 1.35)	491	43 (8.8)	0.94 (0.69 to 1.29)	1.00 (0.71 to 1.42)
Urban versus rural								
Urban	4549	334 (7.3)	1	1	15001	1323 (8.8)	1	1
Rural	985	64 (6.5)	0.88 (0.66 to 1.16)	1.16 (0.84 to 1.61)	1997	146 (7.3)	0.81 (0.68 to 0.97)	0.84 (0.69 to 1.02)
Indices of Multiple Deprivation category								
1 (most deprived)	1241	119 (9.6)	1	1	6148	562 (9.1)	1	1
2	960	95 (9.9)	1.04 (0.78 to 1.38)	1.06 (0.77 to 1.47)	3812	302 (7.9)	0.86 (0.74 to 0.99)	0.85 (0.73 to 1.00)
3	912	69 (7.6)	0.77 (0.57 to 1.05)	0.93 (0.65 to 1.33)	2688	264 (9.8)	1.08 (0.93 to 1.26)	1.09 (0.92 to 1.28)
4	1199	57 (4.8)	0.47 (0.34 to 0.65)	0.57 (0.38 to 0.85)	2244	194 (8.6)	0.94 (0.79 to 1.12)	0.93 (0.77 to 1.11)
5	1222	58 (4.7)	0.47 (0.34 to 0.65)	0.63 (0.43 to 0.92)	2106	147 (7.0)	0.75 (0.62 to 0.90)	0.84 (0.69 to 1.03)
Clinic type								
General Practice	874	82 (9.4)	1	1	3421	279 (8.2)	1	1
Community contraceptive clinics	703	89 (12.7)	1.40 (1.02 to 1.92)	1.70 (1.17 to 2.48)	6871	673 (9.8)	1.22 (1.06 to 1.42)	1.27 (1.08 to 1.49)
Prison	165	21 (12.7)	1.41 (0.84 to 2.35)	1.26 (0.67 to 2.37)	24	0 (0)		
Youth services	1038	105 (10.1)	1.09 (0.80 to 1.47)	1.24 (0.84 to 1.83)	4317	450 (10.4)	1.31 (1.12 to 1.53)	1.21 (1.00 to 1.46)
Military	1200	63 (5.3)	0.54 (0.38 to 0.75)	0.57 (0.37 to 0.88)	257	20 (7.8)	0.95 (0.59 to 1.52)	0.88 (0.48 to 1.62)
University	1752	52 (3.0)	0.30 (0.21 to 0.42)	0.33 (0.22 to 0.51)	2135	92 (4.3)	0.51 (0.40 to 0.65)	0.52 (0.40 to 0.68)
Other healthcare clinics	90	19 (21.1)	2.58 (1.48 to 4.50)	2.43 (1.19 to 4.95)	1348	98 (7.3)	0.88 (0.70 to 1.12)	0.88 (0.68 to 1.15)
Other non-healthcare clinics	643	49 (7.6)	0.80 (0.55 to 1.15)	0.90 (0.58 to 1.42)	1297	115 (8.9)	1.10 (0.87 to 1.38)	1.21 (0.95 to 1.56)
Setting								
Healthcare	1832	211 (11.5)	1		11664	1050 (9.0)	1	
Non-healthcare	4633	269 (5.8)	0.47 (0.39 to 0.57)		8006	677 (8.5)	0.93 (0.84 to 1.03)	

Seven tests have been removed from this analysis, as the screening test result was either blank or incorrectly coded.

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is not complete or is incorrect, such tests cannot be analysed with respect to deprivation and urban/rural classification or at any geographical area (without using a proxy measure such as programme area). IMD and rural/urban classification are derived from postcodes, and any wrong assignment of individuals to a postcode could bias all these analyses.

We calculated testing coverage using total population estimates for the 15–24 age group. However, the target population of NCSP is individuals under 25 that are sexually active, so our estimates in this study are an underestimate of true testing coverage. However, the Department of Health also measures coverage of the programme using the 15–24 population as the denominator, and so our method does allow for overall comparison with data from the Department of Health. It is also possible that some of the services classified as 'youth services' might have been more appropriately described as 'contraception services,' and this may have led to some misclassification of tests by service type.

We were not able to provide estimates of coverage by ethnicity, due to limitations in the public health datasets available to us at lower super output level and within settings. We also did not examine interactions or effect modification which may be occurring between variables. Because IMD and urban/rural were all derived from postcodes, this may confound any associations observed between each of the variables and either screening coverage or positivity.

These data indicate that chlamydia screening in the South East of England needs to be better targeted, especially in males, while increasing the volume of testing. Coverage, as elsewhere in England,[1] was considerably below modelling estimates of their coverage required to achieve disease control,[6] and below the coverage achieved in the 1-year periods of the Department of Health[4] and ClaSS pilots of chlamydia screening.[13] These focused on primary care in order to achieve high coverage. The focus we saw on large military and university settings, especially for males, can generate a large number of tests, but with low positivity. These institutional settings also have a finite limit to the amount of testing they can sustain, which, if targets are to be met, would equate to a relatively small proportion of the overall tests. In the South East, they appear to be targeted at groups of young people at lower risk. A strategy that can give access to both high numbers of the target population and a wide variety of individuals needs to be developed. This will require further engagement with general practice, contraceptive services and youth clinics, all of which can deliver high numbers of tests and demonstrate relatively high positivity compared with other settings. It is often claimed that men underutilise general practice, but consultation rates in 15–19-year-old and 20–24-year-old males were 2.83 and 3.40 per person year, respectively, in 2007,[14] suggesting that opportunistic testing in primary care may be more realistic than is generally assumed.

Ongoing data analyses of the kind we demonstrate here, describing the distribution of testing coverage and positivity, will be required to provide continuous evaluation and highlight areas where current targeting could be improved. Such analyses can assist local and national programmes to improve their strategy for the targeting of testing in order to improve equity of coverage, increase testing volumes and detect a greater proportion of chlamydia infections.

Key messages

- Coverage in the fourth year of the National Chlamydia Screening programme in the South East remains low in both males and females (1.0% and 3.3% 15–24-year-olds respectively).
- Testing is higher for more deprived areas for females but not males.
- Positivity was lower in tests done through university clinics and for males military clinics compared with general practice.
- Clinics within the healthcare settings have demonstrated, and continue to demonstrate, that high volumes of testing can be achieved with corresponding high positivity.

Competing interests None.

Contributors JC was the PI for the study; SJ conducted the analyses and was the lead author for the paper; all authors contributed to the design of the study; JC, CB, GB and IS contributed to the write-up.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

1. **National Chlamydia Screening Steering Group.** *New frontiers: Annual Report of the National Chlamydia Screening Programme in England 2005/06*, 2006.
2. **Simms I,** Stephenson JM. Pelvic inflammatory disease epidemiology: what do we know and what do we need to know? *Sex Transm Infect* 2000;**76**:80–7.
3. **National Health Service.** *National Chlamydia Screening Programme, England—core requirements*. 3rd edn. 2006.
4. **Pimenta JM,** Catchpole M, Rogers PA, *et al*. Opportunistic screening for genital chlamydial infection. I: acceptability of urine testing in primary and secondary healthcare settings. *Sex Transm Infect* 2003;**79**:16–21.
5. **Low N,** McCarthy A, Macleod J, *et al*. The chlamydia screening studies: rationale and design. *Sex Transm Infect* 2004;**80**:342–8.
6. **Turner KM,** Adams EJ, Lamontagne DS, *et al*. Modelling the effectiveness of chlamydia screening in England. *Sex Transm Infect* 2006;**82**:496–502.
7. **LaMontagne DS,** Fenton KA, Randall S, *et al*. Establishing the National Chlamydia Screening Programme in England: results from the first full year of screening. *Sex Transm Infect* 2004;**80**:335–41.
8. **Kufeji O,** Slack R, Cassell JA, *et al*. Who is being tested for genital chlamydia in primary care? *Sex Transm Infect* 2003;**79**:234–6.
9. **HPA South East, South East Public Health Observatory**. *2008 Sexual Health in the South East: A collaborative report by Health Protection Agency South East and the South East Public Health Observatory*, 2008.
10. **National Administrative Codes Service.** *Southern Region Postcode Directory* 2007.
11. **Communities and Local Government.** *The English Indices of Deprivation 2007*. 2008.
12. **Office of National Statistics.** *Super Output Area mid-year population estimates for England and Wales (experimental)*, 2008.
13. **Roberts TE,** Robinson S, Barton PM, *et al*. Cost effectiveness of home based population screening for *Chlamydia trachomatis* in the UK: economic evaluation of chlamydia screening studies (ClaSS) project. *BMJ* 2007;**335**:291.
14. **Qresearch (c), The information centre for health and social care NHS.** *Qresearch report on trends in consultation rates in General Practices 1995–2008*. 2008.

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Sex Transm Infect 2010 86: 217-221 originally published online May 10, 2010
doi: 10.1136/sti.2009.037283

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